

AMENDMENT UNDER 37 C.F.R. § 1.114(c)
U.S. APPLICATION NO. 09/813,992
ATTORNEY DOCKET NO. Q63598

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (withdrawn): A method of cutting off a fuse electrode among a plurality of fuse electrodes extending parallel to each other, comprising the steps of:

setting cutting positions on adjacent fuse electrodes to positions which are different from each other in a direction in which the fuse electrodes extend; and

applying a laser beam to each of said cutting positions to cut off each of said adjacent fuse electrodes.

2. (withdrawn): A method of cutting off a fuse electrode among a plurality of fuse electrodes extending parallel to each other and including adjacent fuse electrodes disposed in respective layers which are different from each other, comprising the steps of:

focusing a laser beam onto a fuse electrode in one of the layers to be cut off; and

cutting off only said fuse electrode onto which said laser beam is focused, with the laser beam at a predetermined position thereon.

3. (withdrawn): An apparatus for cutting off a fuse electrode among a plurality of fuse electrodes extending parallel to each other and disposed in an integrated circuit device, comprising:

a holding stage for holding a laser beam to cut off the fuse electrode to said integrated circuit device held by said holding stage;

a slide unit for moving said holding stage in a predetermined direction; and

an operation controller for setting cutting positions on adjacent fuse electrodes to positions which are different from each other in a direction in which the fuse electrodes extend, and controlling said laser unit and said slide unit to apply a laser beam to each of said cutting positions.

4. (withdrawn): An apparatus for cutting off a fuse electrode among a plurality of fuse electrodes extending parallel to each other and disposed in an integrated circuit device, said fuse electrodes including adjacent fuse electrodes disposed in respective layers which are different from each other, comprising:

a holding stage for holding said integrated circuit device in a predetermined position;

a laser unit for applying a laser beam to cut off the fuse electrode to said integrated circuit device held by said holding stage;

a slide unit for moving said holding stage in a predetermined direction; and

an operation controller for controlling said laser unit and said slide unit to apply a laser beam to the fuse electrode, and controlling said laser unit to focus the laser beam onto only the fuse electrode to be cut off.

Claims 5-7 (canceled).

8. (withdrawn): A method of manufacturing an integrated circuit device having a plurality of fuse electrodes extending parallel to each other, a plurality of windows associated respectively with said fuse electrodes, said windows including windows associated respectively with adjacent ones of said fuse electrodes and disposed in respective positions which are different from each other in a direction in which the fuse electrodes extend, said windows being defined by an insulating film having a thickness which allows a laser beam to pass therethrough to cut off the fuse electrodes, and a logic circuit having a wiring pattern, said method comprising the steps of:

fabricating said fuse electrodes together with the wiring pattern of said logic circuit;

growing an insulating layer on said fuse electrodes and said wiring pattern; and

defining a contact hole and said windows in said insulating layer, said contact hole reaching said wiring pattern.

9. (withdrawn): The method according to claim 8, wherein said step of growing an insulating layer comprises the step of growing said insulating layer to a thickness which prevents said laser beam from damaging the fuse electrodes, in a region other than said windows.

10. (withdrawn): A method of manufacturing an integrated circuit device comprising a plurality of fuse electrodes extending parallel to each other and including adjacent fuse electrodes disposed in respective layers which are different from each other, a cover layer disposed on said fuse electrodes and comprising an insulating film having a thickness which allows a laser beam to pass therethrough to cut off the fuse electrodes, and a logic circuit having a plurality of wiring patterns disposed in respective layers, said method comprising the steps of :

fabricating said wiring pattern and said fuse electrodes together in each of said layers;

defining a contact hole reaching the wiring pattern in one of said layers, and removing the insulating film over the fuse electrodes in the same layer as said one of the layers while leaving predetermined thickness thereof; and

depositing a cover layer having a predetermined thickness over the fuse electrodes in each of the layers.

11. (canceled).

12. (currently amended): An integrated circuit device comprising:

a plurality of fuse electrodes disposed in a parallel array with a pitch ~~substantially equal~~
~~to or~~ less than a spot diameter of a laser beam to be used for cutting said fuse electrodes; and

an insulating film covering said plurality of fuse electrodes,

wherein said insulating film comprises:

a plurality of cutting positions formed over said fuse electrodes in which said
insulating film has a thickness which allows said laser beam to pass through said insulating film
and cut said fuse electrodes;

a plurality of regions of said insulating film having a thickness which prevents
said laser beam from damaging said fuse electrodes, and

wherein said plurality of cutting positions are disposed in respective positions which are
different from each other in a direction in which said fuse electrodes extend; and

wherein at least one of said plurality of fuse electrodes is disposed in a position in said
insulating film that is different from a position of at least one other of said plurality of fuse
electrodes, in a direction of a thickness of said insulating film.

13. (previously presented): The integrated circuit device of claim 12, wherein each
successive fuse electrode of said plurality of fuse electrodes is disposed alternately in a position

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in said insulating film that is different from a position of a preceding fuse electrode of said plurality of fuse electrodes, in a direction of a thickness of said insulating film.

14. (currently amended): The integrated circuit device of claim 12, wherein at least one successive fuse electrode of said plurality of fuse electrodes is disposed in a position in a direction of a thickness of said insulating film ~~in said insulating film~~ that is the same as a position in a direction of a thickness of said insulating film of a preceding fuse electrode of said plurality of fuse electrodes, ~~in a direction of a thickness of said insulating film~~.